Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of Part 90 of the Commission's Rules to Adopt Regulations for Automatic Vehicle Monitoring Systems	)	PR Docket No. 93-61
	)	
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	)	

PETITION FOR PARTIAL RECONSIDERATION AND CLARIFICATION

AirTouch Teletrac ("Teletrac"), by its attorneys and pursuant to Section 405 of the Communications Act of 1934, as amended (the "Communications Act"), 47 U.S.C. § 405, and Section 1.106 of the Commission's Rules, 47 C.F.R. § 1.106, hereby petitions the Commission to reconsider and clarify certain aspects of its Report and Order in the above-referenced proceeding.[1] Particularly, Teletrac requests that the Commission reconsider the emissions specifications and bandwidth limitations it has established for multilateration Location Monitoring Service ("LMS") providers. Because the adopted specifications pose immediate and significant implementation problems and a very real potential for degradation of existing system performance, Teletrac asks the Commission to reconsider this specific, technical issue on an expedited basis[2]

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1 FCC 95-41, released February 6, 1995. The Report and Order appeared in the Federal Register on March 23, 1995, 60 Fed. Reg. 15248. Thus, this petition for partial reconsideration and clarification is timely filed.

2 LMS providers are to have equipment type-accepted to comply with the new specifications by April 1996. Because of the significant investment this entails, it is imperative that the specification problems be resolved quickly.

and, to that end, offers an alternative recommendation for emissions. In addition, Teletrac asks the Commission to clarify whether long range video links are to be included in the category of "unprotected" Part 15 devices.

I. INTRODUCTION

Teletrac is a joint venture between North American Teletrac and Location Technologies, Inc. It is the nation's leading provider of vehicle location services and was the initiator of this proceeding. Teletrac has long believed that the interim rules for Automatic Vehicle Monitoring ("AVM"),[3] by their very uncertainty, have impeded development of and investment in AVM technology. Thus, Teletrac applauds the Commission's adoption of permanent rules for LMS.[4] However, certain of the technical requirements imposed by the Commission are unduly prohibitive and will serve only to impede the development of multilateration LMS systems.

II. DISCUSSION

A. The Commission's Bandwidth Limitations and Emission Specifications are Unreasonably Prohibitive and Unworkable.

The emission specifications for LMS outlined in new Section 90.209(m) of the Commission's rules are prohibitive and impractical for all multilateration LMS systems such as Teletrac and overly stringent for non-multilateration LMS systems. Indeed, based on information presented by each of the known multilateration LMS

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3 See 47 C.F.R. § 90.239.

4 The Commission has adopted LMS as the new moniker for AVM and other future transportation-related services. See Notice of Proposed Rulemaking, 8 FCC Rcd 2502, 2503 (1993) ("NPRM"); Report and Order at ¶ 1.

operators in this proceeding, not a single system can meet the requirements of Section 90.239(m).

When the Commission first proposed the specifications adopted in Section 90.209(m), the major multilateration LMS systems all proposed alternatives.[5] These alternatives were proposed because multilateration LMS systems require relatively wide bandwidths to achieve their full efficiency and performance and the Commission's drastic emissions cut-offs at the frequency band edges are problematic for these systems.[6] The alternative proposals also provided more than adequate protection to adjacent sub-band licensees.[7]

The degree of out-of-band attenuation imposed by new Section 90.209(m) will require that multilateration LMS systems employ significantly lower chipping rates than they currently employ and will require almost all LMS operators to filter emissions by several orders of magnitude more than their existing system designs currently

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5 See, e.g., Teletrac Comments, June 29, 1993, at p. 50; Pinpoint Communications Reply Comments, July 29, 1993, at Appendix B, p. 31; Southwestern Bell Comments, June 29, 1993, at p. 24; MobileVision Comments, June 29, 1993, at Annex A, p. 20. In addition, several non-multilateration LMS commenters concurred with the alternative emissions specifications proposed by multilateration LMS licensees during the course of this rulemaking proceeding.

6 The new specification also presents issues for non-multilateration LMS systems. The low cost of mobile units employed in these systems will be driven unreasonably high given their need to operate over a relatively wide range of center frequencies. Recognizing this need for low cost, Teletrac would support relaxation of frequency tolerance requirements for LMS systems in light of the defined band plan and proposed out-of-band emissions specifications.

7 The resulting emissions levels were well below the interference levels created by signals from other services in the band.

accommodate. During the course of this proceeding, Teletrac and other multilateration system proponents urged the Commission to consider bandwidth authorizations and emission specifications that take these factors into account.[8]

Moreover, at the time these emissions specifications proposals were presented, the bandwidth authorization for multilateration LMS systems was expected to be 8 MHz.[9] However, the Commission ultimately authorized bandwidths of 5.75 MHz or less. Report and Order, ¶ 90.[10] This reduced bandwidth makes the emissions specifications imposed by the Commission even more onerous. In fact, the specifications are technically impossible to meet without excessive filtering or significant reductions in the chipping rates of multilateration LMS systems' location signals.[11] Neither of these alternatives is technically feasible given the accuracy and capacity required for the location-based services provided by Teletrac and to be provided by other multilateration LMS systems.

In addition to the issues these specifications present for wideband signals, the unusually high resolution bandwidth measurement of 100 kHz[12] presents difficulties for measuring out-of-band

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8 See, e.g., Teletrac Comments, MobileVision Comments.

9 See NPRM, 8 FCC Rcd at 2507. The interim AVM rules also provided for 8 MHz of bandwidth. See 47 C.F.R. §90.239(c)(1); Vehicle Locator Systems, 30 Rad. Reg. 1665 (1974).

10 See also new Section 90.209(b)(10) of the Commission's Rules.

11 It is Teletrac's understanding that not one of the multilateration LMS systems would be able to meet the emission requirements as currently written.

12 See new Section 90.209(m)(3) of the Commission's Rules.

emissions of narrowband forward links or other narrowband signals near the edges of the LMS sub-bands. Such a wide measurement bandwidth in conjunction with the high degree of attenuation required at the sub-band edges (i.e., 55+10log(P))[13] is impractical for these relatively narrowband signals (as small as 25 kHz) which are employed by most multilateration systems (e.g., Teletrac, MobileVision and Southwestern Bell) and the interrogators/readers of some non-multilateration LMS systems.

In view of all of the technical and implementation problems that new Section 90.209(m) raises, Teletrac respectfully requests that the Commission reconsider the provisions of this rule and correct the impracticality of its implementation by taking into account the reasonable, real and immediate needs of multilateration LMS systems. In order to be implemented on a practical basis, the rule must include specifications that allow for gradual roll-off of out-of-band emissions and measurement bandwidths that are appropriate for the different types of LMS signals. Indeed, Teletrac is not requesting treatment that would be unique to LMS systems--similar treatment has been accorded other services that employ digital modulation.[14]

Thus, Teletrac proffers two different bandwidth specifications for implementation--one for LMS transmitters operating at or below 30 watts ERP and another for LMS transmitters operating above 30 watts

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13 See id.

14 See, e.g., Sections 94.71(c)(2) and 21.106(a)(2) of the Commission's Rules.

ERP (i.e., narrowband forward links).[15] For LMS wideband emissions, operating in the 902-928 MHz band, in any 100 kHz band, the center frequency of which is removed from the center of the authorized sub-bands(s) by more than 50 percent up to and including 250 percent of the authorized bandwidth, Teletrac proposes the following: the mean power of emissions shall be attenuated below the maximum permitted output power[16] as specified by the following equation but in no case less than 31 dB:

$$A=16+0.4(P-50)+10 \log B$$

(attenuation greater than 66 dB is not required)

where

A = attenuation (in decibels) below the maximum permitted output power level,
P = percent removed from the center of the authorized sub-band(s),
B = authorized bandwidth in megahertz.[17]

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15 Since these narrowband transmissions differ from the wideband transmissions it seems only sensible to apply a separate emissions specification.

16 A maximum permitted output power of 30 watts is assumed. Any variation in the permitted output power may require a modification to the equation.

17 This specification is derived from specifications for high-speed digital communications transmitters contained in Sections 94.71(c)(2) and 21.106(a)(2) of the Commission's Rules. It has been modified from the referenced specifications in two ways: minimum and maximum attenuations have been adjusted for the measurement bandwidth difference (100 kHz vs. 4 kHz) and the roll-off factor has been adjusted (0.4 versus 0.8) to take into account the wide bandwidth requirements of multilateration LMS location signals. These modifications compensate for the differences between LMS and the services contemplated by these other rule sections. The adjustments take into account the reduced spectral density of LMS signals, relatively low signal levels, short duration of wideband emissions and short-range operations of non-multilateration LMS systems in adjacent sub-bands.

For narrowband forward link emissions greater than 30 watts ERP, Teletrac suggests a bandwidth emissions specification similar to that instituted for narrowband Personal Communications Services in Section 99.133(a) of the Commission's Rules or 900 MHz Multiple Address Systems in Section 94.71(c)(4) of the Commission's Rules. Thus, for LMS narrowband forward link emissions, Teletrac proposes that the power of any emission be attenuated below the transmitter power (P) in accordance with the following schedule: on any frequency outside the authorized sub-band and removed from the edge of the authorized sub-band by a displacement frequency (fd in kHz)-- at least 116 Log10((fd+10)/6.1) decibels or 50+10Log10(P) decibels or 70 decibels, whichever is the lesser attenuation.[18] A minimum spectrum analyzer resolution bandwidth of 300 Hz shall be used when showing compliance.

These recommendations have been jointly formulated and agreed upon by the multilateration LMS proponents (Teletrac, MobileVision, Pinpoint Communications, Southwestern Bell and Uniplex) as a reasonable means to conform the Commission's Rules to the realities of multilateration LMS systems. Additionally, general agreement in principle has been received from certain non-multilateration LMS proponents.[19] Thus, Teletrac strongly recommends that the Commission reconsider its Section 90.209(m) emissions specifications and adopt the specifications described above. Teletrac cannot

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18 This somewhat more stringent specification than that proposed for wideband emissions is appropriate given the relatively narrow bandwidth and high power authorized for the narrowband forward link sub-bands.

19 Because the affected parties have agreed upon these solutions, the Commission's basis for its adoption of Section 90.209(m) appears moot. See Report and Order, ¶ 99.

overemphasize the need for expedited reconsideration of this particular technical issue, given the very short time period allotted in the new rules for LMS system compliance.[20]

B. The Commission's Categorization of "Unprotected" Part 15 Devices Should Be Clarified.

In addition, Teletrac seeks Commission clarification of the categories of Part 15 devices that are "unprotected" under new Section 90.361 of the Commission's Rules. In particular, Teletrac seeks a minor clarification as to whether long range video links are to be included in the category of unprotected devices. Multilateration LMS proponents had all concurred in their comments in this proceeding that the majority of interference received from Part 15 devices concerned field disturbance sensors and long range video links. See Report and Order at ¶ 36, n.85. The Commission recognized this concern, stating "[f]inally, because multilateration entities concur that most Part 15 interference to multilateration LMS systems is likely to be from field disturbance sensors and long range video links, we will not make any presumption of interference-free operations for these devices when they operate in exclusive use bands." Id. at ¶ 37 (footnote omitted).

Yet when the Commission adopted new Section 90.361 regarding the "negative definition" of interference from Part 15 and amateur operations, long range video links were not addressed. As a result, Teletrac requests clarification of this point so that it may accurately assess its status with respect to these devices.

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20 See n.2, supra.

III. CONCLUSION

Teletrac is one of the entities that has made automatic vehicle monitoring a reality and has long lobbied for permanent rules to govern the operation of this service. However, the emission specifications for multilateration LMS operators as adopted in the Report and Order are virtually impossible for Teletrac and other current multilateration LMS operators to meet and only serve to hinder those companies that have pioneered the service and made it a practical offering to date. Accordingly, Teletrac respectfully requests that the Commission reconsider the emission specifications on an expedited basis and adopt the recommendations of Teletrac and others as described herein.

Respectfully submitted,

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